

Los Alamos Large Scale Demonstration and Deployment Project Mid Year Review, March 2000



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Presentation Outline

- Project goals and technical approach
- Technology needs/ relevancy
- Technical progress/ demonstration results
- Future Plans



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The Los Alamos LSDDP was established to address DOE's contaminated large metallic objects

- 28,000 m³ of TRU boxed waste in DOE
- 2400 m³ at LANL in Storage
- 3000 m³ from future D&D at LANL
- 150 oversized crates at INEEL AMWTP
- 58 steel boxes at NTS
- 30 oversized crates at LLNL
- 97 oversized crates at SR



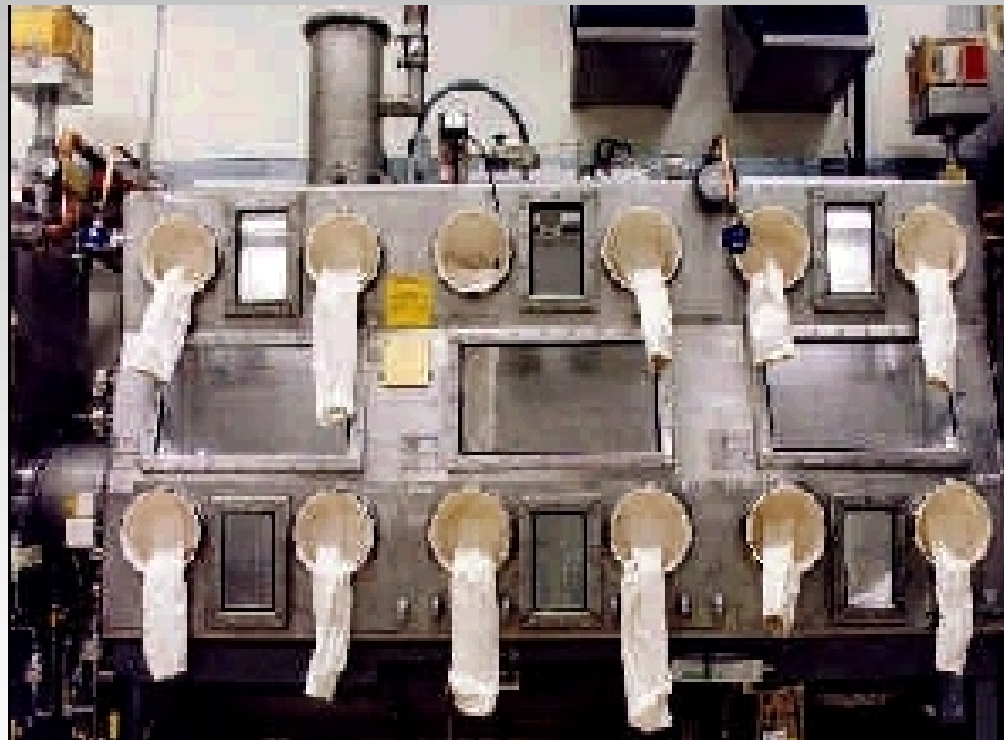
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Criteria;

1. Goals
2. Relevancy

Three station LANL glovebox



Large-Scale Demonstration & Deployment 

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Criteria;

1. Goals
2. Relevancy

Crated LANL large metal objects after retrieval



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Criteria;

1. Goals
2. Relevancy

Glovebox crating in progress



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Criteria;

1. Goals
2. Relevancy

The Los Alamos LSDDP objectives:

- Demonstrate improved cost/risk technologies appropriate to DVRS processes, facilitating improved technology selection
- Demonstrate technologies amenable to deployment
- Demonstrate side-by-side with DVRS baseline
- Synergism from industry, academia, and government
- Demonstrate leveraged funding pool



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Criteria;
1. Goals

The Los Alamos DVRS baseline process separates TRU from LLW

- Assay of crates
- Manual opening of crates
- Manual removal of packing & equipment
- Removal of legs and apurtenances
- Removal of shielding
- Gross decontamination
- Aggressive Decontamination
- Shear/Baler volume reduction
- Packaging and manifesting



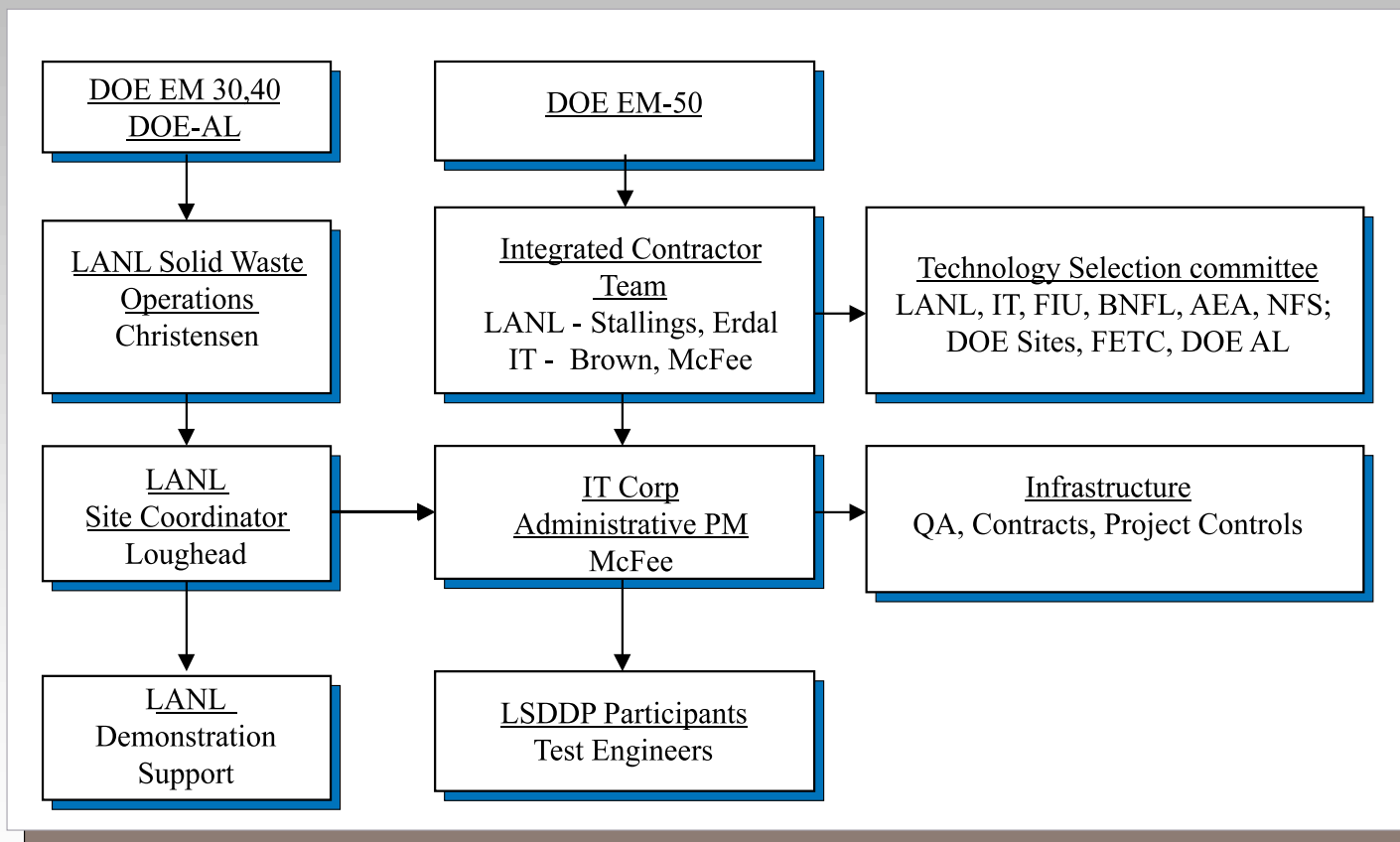
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Criteria;

1. Goals
2. Relevancy

Los Alamos LSDDP organization chart



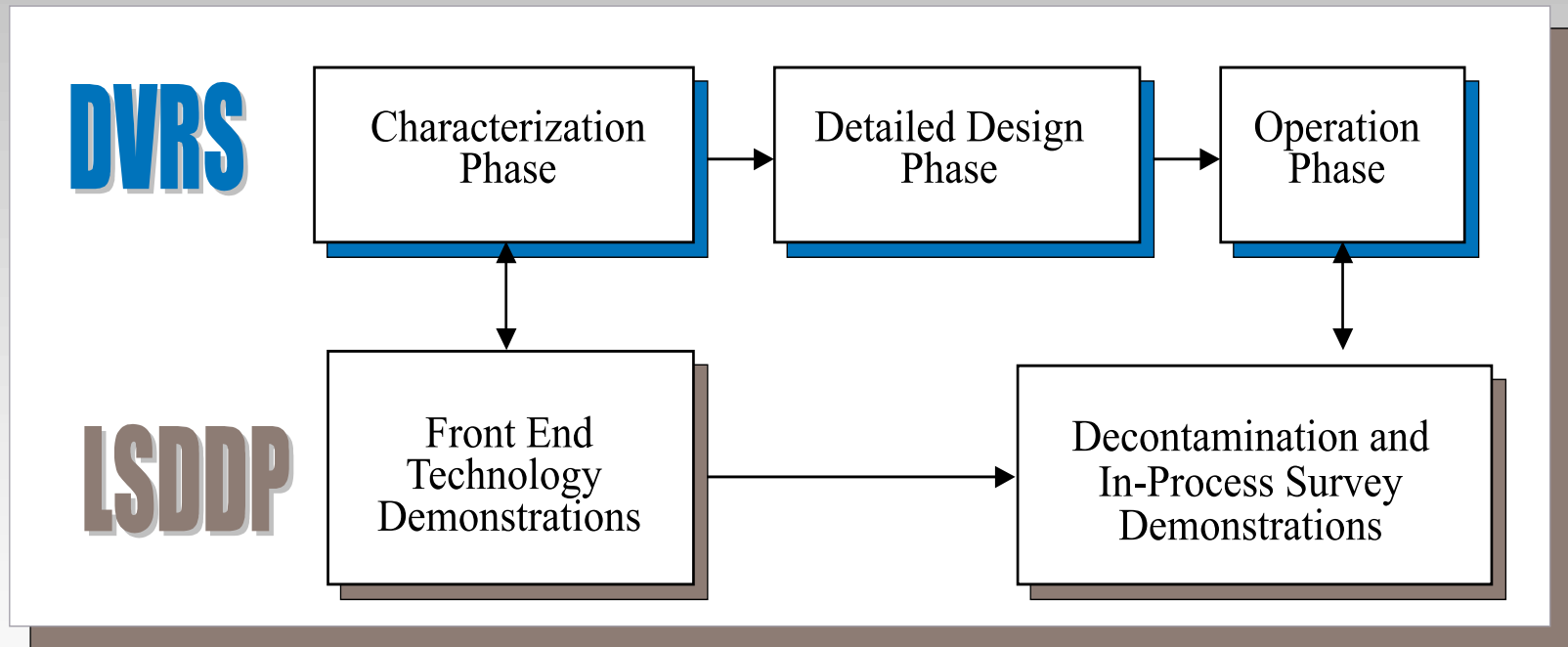
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Criteria;

1. Goals
2. Relevancy

The LSDDP approach supports the LANL DVRS operation and deployment



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Criteria;

1. Goals
2. Relevancy

The Los Alamos LSDDP communication plans include demonstration results and technology search activities:

- Website maintained with information on demonstration results, information for potential vendors, and results for interested DOE users.
- Presentations and booths at technical symposiums
- LSDDP staff is communicating with NTS, RFETS, INEEL, AMWTP, RL, SR, and Fernald to ensure multiple site needs are included



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Criteria;

1. Goals
2. Relevancy

The FY-99 demonstrations included:

- AeroGo air pallets for easy placement of crates in the crate counter
- SAIC VACIS for RTR of crates
- MCS transportable X-Ray for RTR of crates
- Mega-Tech hydraulic cutter for removal of glovebox legs and appurtenances



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Criteria;
1. Goals

The Los Alamos Solid Waste Operations has re-defined technical needs;

- Method or equipment to remove lead shielding
- Method for analysis of residual lead
- Equipment for in-process TRU characterization
- Low risk method for crate opening
- Improved method for spot decontamination
- Improved method for data collection and management for waste characterization data and process data.
- Low cost method for headspace gas sampling



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Criteria;
2. Relevancy

Los Alamos technical needs correlate to Complex wide needs

- Lead shielding removal - CHMW03-99, RFDD21
- Analysis of residual lead - ID-7.2.15
- TRU characterization- AL-09-01-11-MW
- Crate opening - NV-7-8.1-03
- Spot decontamination - RLDD06, AL-00-01-15-MW
- Data collection - AL-09-01-12-MW, CAO-99-05
- Headspace gas sampling - RFMW07

Criteria;
2. Relevancy



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Technology Demonstration: AeroGo air pallets

- Technology expedited movement and accurate positioning of large and small crates in DVRS neutron counter
- The baseline technology was “heavy hauler” wheeled carts, but did not work
- Demonstration scope involved two modes of operation; LINC positioning, and maze movement
- Technology is well developed in commercial industry
- Demonstration took place in June 1999



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Criteria;
3. Tech Progress

DVRS Slab Counter for application of AeroGo pallets



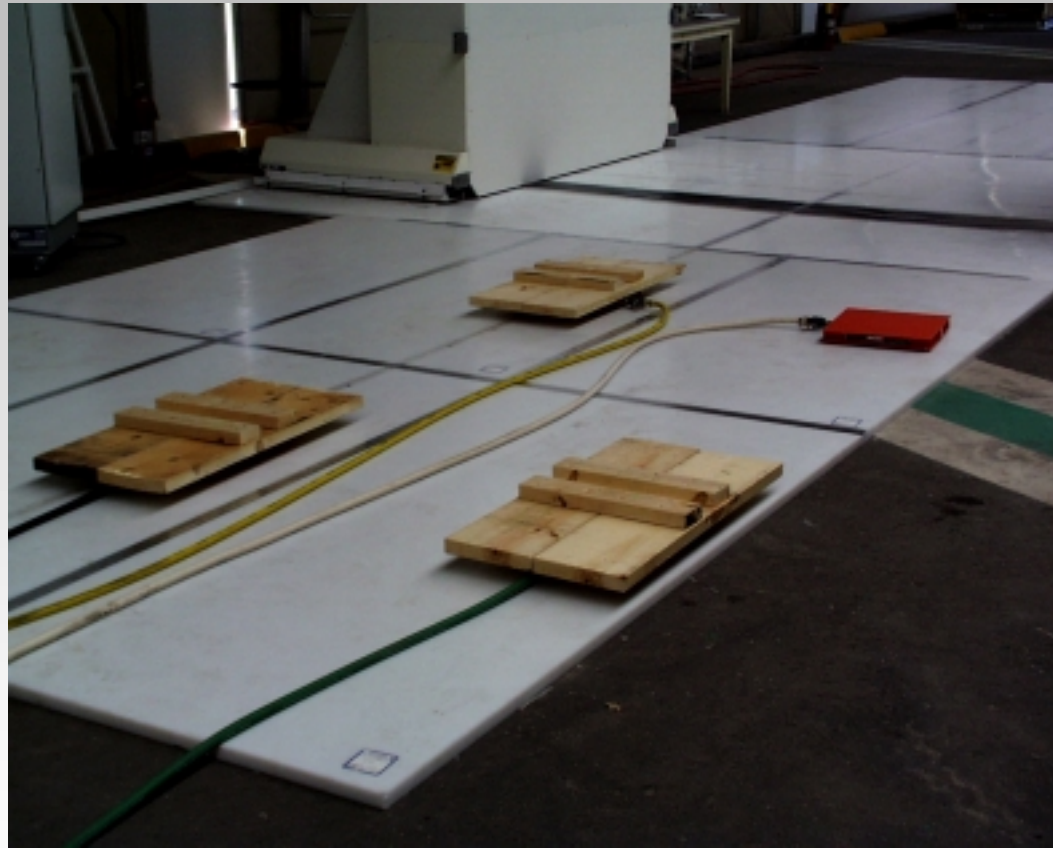
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Criteria;
3; Tech Progress

AeroGo Load Modules



Large-Scale Demonstration & Deployment 

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Criteria;
3. Tech Progress

The AeroGo demonstration was successful;

- Small crates were moved through Large Item Neutron Counter better than wheeled cart baseline
- Large creates could not be moved with the baseline
- Crates were moved through a large “maze” to demonstrate the AeroGo air pallets maneuverability
- Equipment was operated by LANL technical staff and provided qualitative input to evaluation
- LANL has purchased two versions of AeroGo pallets for continued use.



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Criteria;

2. Relevancy
3. Tech Progress

Contact Information

- Bob Jeffers; AeroGo; 206-283-0785
- John McFee; IT Corp; 303-793-5231
- Ellen Stallings; LANL; 505-667-2236
- Steve Bossart; NETL; 304-285-4643



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Criteria;
2. Relevancy

Technology Demonstration: Mobile VACIS RTR System

- Technology is to RTR crates to identify mixed waste and to improve safety in crate opening and processing
- Technology is a risk reduction for DVRS operation as RTR was not in baseline
- Technology is deployed by US Customs for locating contraband in trucks
- Demonstration unit was prototype for transportable system under test by DoD
- Demonstration took place in June 1999



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Criteria;

2. Relevancy
3. Tech Progress

Radiography of crates is a complex wide need;

- Appropriate characterization of TRU waste now stored in FRP boxes; AL-07--1-14-MW
- Detection of freestanding liquid in equipment and piping; RL DD 0037
- Oversize TRU waste size reduction; NV07-9902-05 (inferred secondary need)
- Radionuclide quantification of sold waste; SR-9910003 (Inferred secondary need)
- Known boxes and crates at RL, INEEL, and SR



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Criteria;
2. Relevancy

The Mobile VACIS is a compact unit for road travel



Large-Scale Demonstration & Deployment 

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Criteria;
3. Tech Progress

VACIS system for RTR of LANL crates



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Criteria;
Tech Progress

VACIS system for RTR of trucks



Criteria;
3. Tech Progress



Large-Scale Demonstration & Deployment **R&D**

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VACIS provided excellent images of crate contents



Large-Scale Demonstration & Deployment 

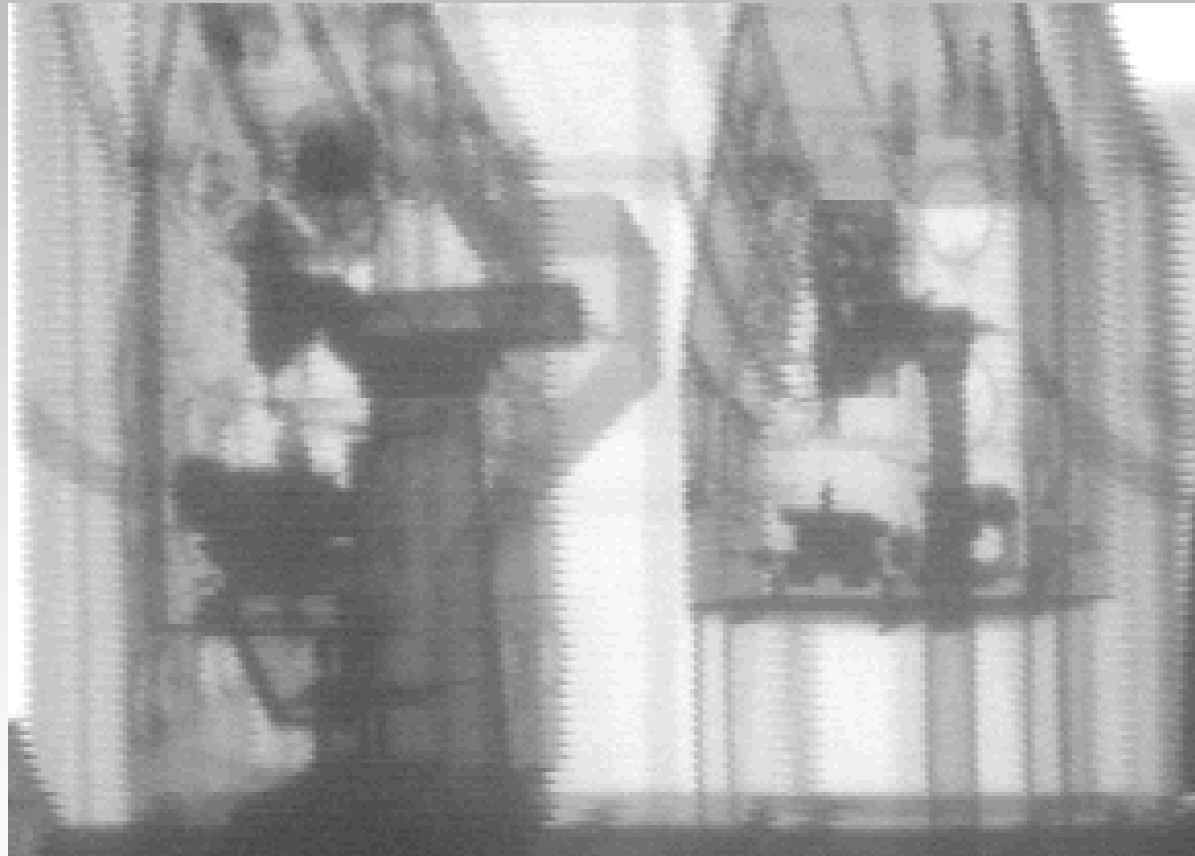
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Criteria;
3. Tech Progress

VACIS imaged crated gloveboxes with machine tools

LA-UR-99-3589



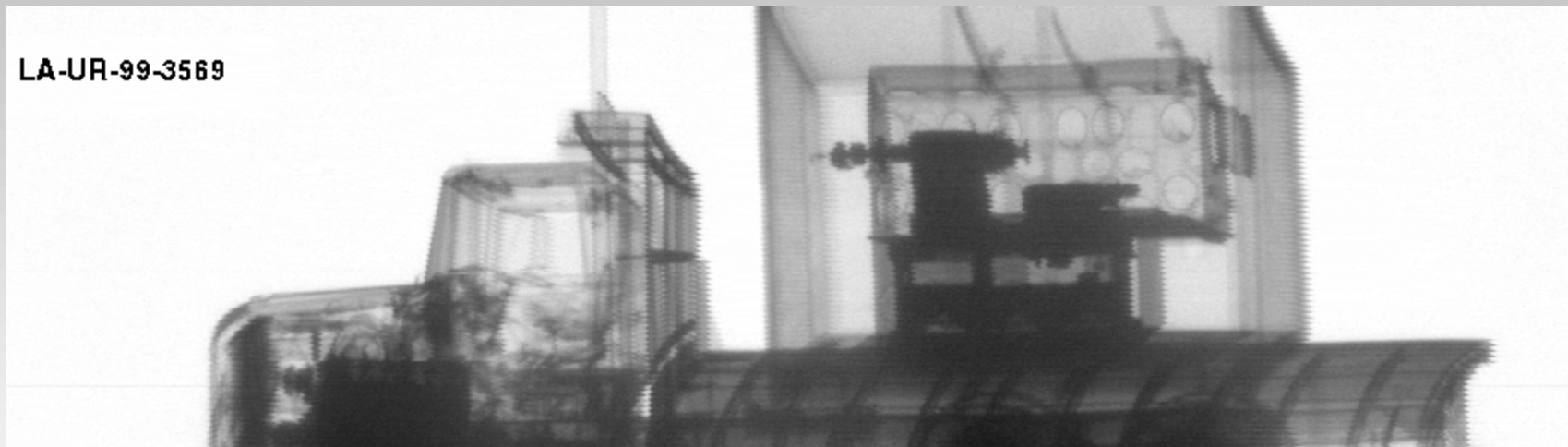
Large-Scale Demonstration & Deployment **RD**

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Criteria;
3. Tech Progress

VACIS provided excellent images of crate contents



Large-Scale Demonstration & Deployment 

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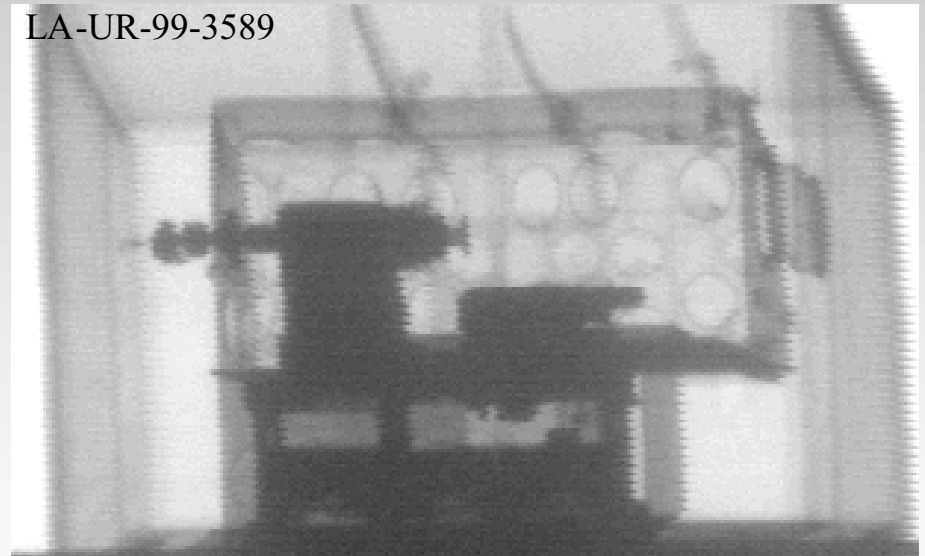


Criteria;
3. Tech Progress

VACIS images support information on crate contents



LA-UR-99-3589



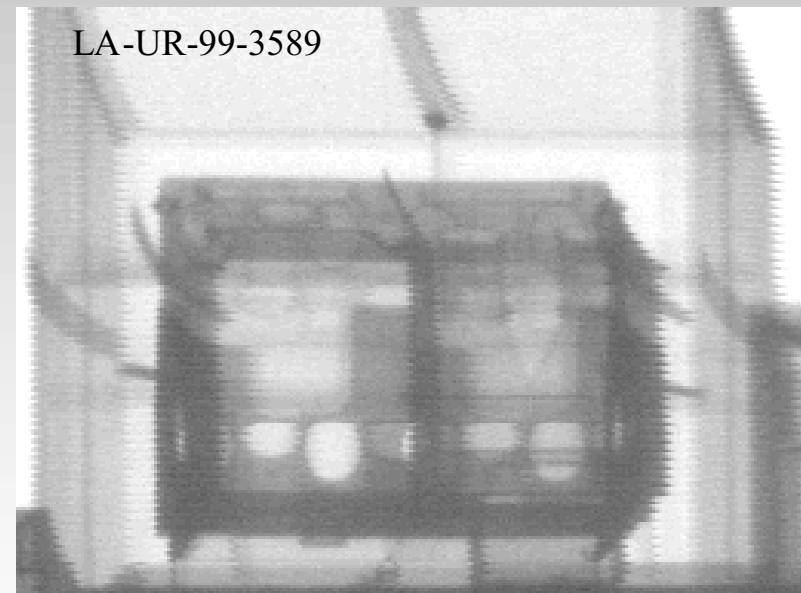
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Criteria;
3. Tech Progress

Vacis provided excellent images of crate contents



Large-Scale Demonstration & Deployment 

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Criteria;
3. Tech Progress

Crates with trash were identifiable

LA-UR-99-3589



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Criteria;
3. Tech Progress

The VACIS demonstration was very successful

- 43 Crates and other cargos were imaged in 2 days of a one week demonstration
- Several DOE sites have reviewed the demonstration results for applicability.
- WIPP waste characterization personnel have expressed interest
- LANL will use VACIS images to select crates for processing and improve crate handling safety



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Criteria;

2. Relevancy
3. Tech Progress

Contact Information

- Chris McBee; SAIC; 619-646-9736
- John McFee; IT Corp; 303-793-5231
- Ellen Stallings; LANL; 505-667-2236
- Steve Bossart; NETL; 304-285-4643



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Criteria;
2. Relevancy

Technology Demonstration: MCS X-Ray of crates

- Technology is to RTR crates to identify prohibited items and to improve safety in crate opening and processing
- Technology is a risk reduction for DVRS operation as RTR was not in baseline
- Prototype based on systems for WIPP waste certification of drums and SWBs
- Demonstration took place in January 2000.



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Criteria;

2. Relevancy
3. Tech Progress

Radiography of crates is a complex wide need;

- Appropriate characterization of TRU waste now stored in FRP boxes; AL-07--1-14-MW
- Detection of freestanding liquid in equipment and piping; RL DD 0037
- Oversize TRU waste size reduction; NV07-9902-05 (inferred secondary need)
- Radionuclide quantification of sold waste; SR-9910003 (Inferred secondary need)
- Known boxes and crates at RL, INEEL, and SR



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Criteria;
2. Relevancy

MCS RTR Unit on Location



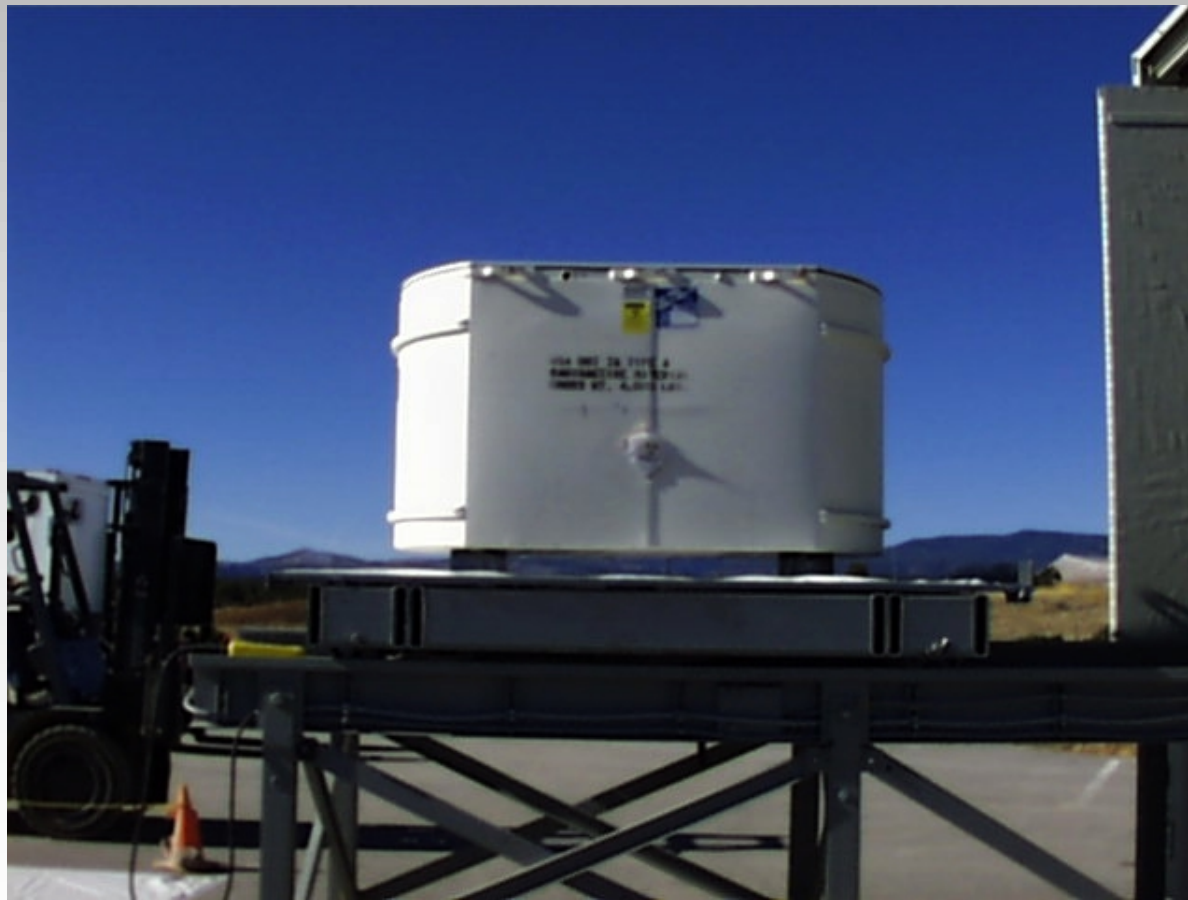
Large-Scale Demonstration & Deployment **RD**

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Criteria;
3. Tech Progress

Crate Staged on MCS Unit Trolley



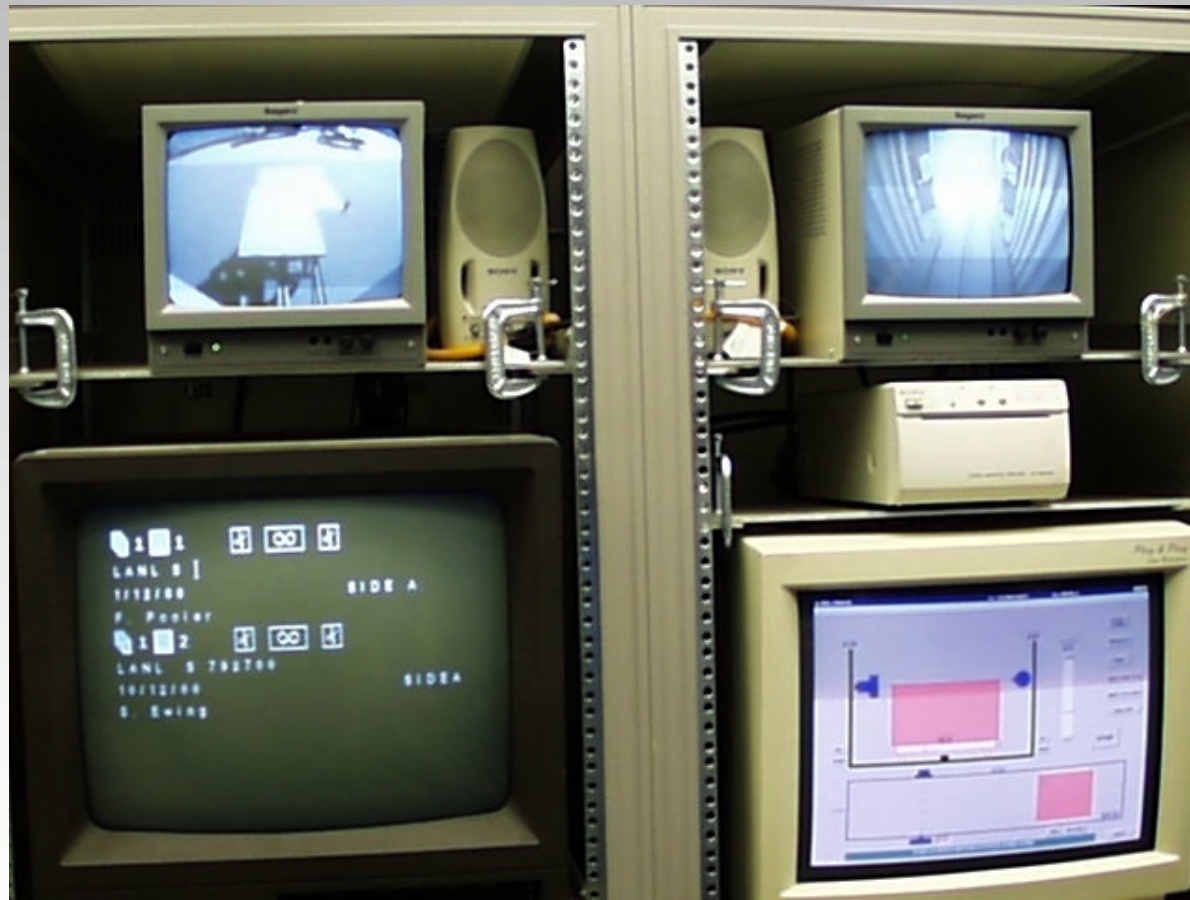
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Criteria;
3. Tech Progress

MCS Control Console with Video Monitors



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Criteria;
3. Tech Progress

The MCS demonstration was very successful:

- The system was brought on-site by MCS
- MCS staff operated the system, LANL personnel staged the crates
- The demonstration RTR'd 20 representative crates and objects in a one week demonstration
- A vessel containing liquids was identified
- An unknown cylinder content was identified
- LANL is considering deployment of the system



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Criteria;

2. Relevancy
3. Tech Progress

Contact Information

- Eric Pennala; MCS; 505-823-0118
- John McFee; IT Corp; 303-793-5231
- Ellen Stallings; LANL; 505-667-2236
- Steve Bossart; NETL; 304-285-4643



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Criteria;
2. Relevancy

Technology Demonstration; Mega-Tech hydraulic cutter

- Hydraulic cutter is to demonstrate improvement in time and risk in removing glovebox legs and apurtenances.
- Baseline is reciprocating saw
- Demonstration was in a simulated radioactive environment using LANL labor to dismantle many gloveboxes and improve data quality.
- Demonstration was off-site to reduce cost.
- Demonstration took place in September 1999.



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Criteria;
3. Tech Progress

Mega-Tech BPC-4 cutting pipe legs



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Criteria;
3. Tech Progress

Metal cutting is a complex-wide need;

- Removal of lead shielding from gloveboxes and other equipment; RF-DD2
- Alternative cutting technologies for piping; AL-00-01-05
- Improved non-thermal cutting for process equipment; ORDD-09
- Known glovebox removal activities such as those at Rocky Flats and those upcoming at RL and SR.



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Criteria;
2. Relevancy

Mega-Tech Blade Cutting Plunger (BPC-4)



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Criteria;
3 Tech Progress

The Mega-Tech demonstration was successful

- The data from 12 simulations facilitates straightforward comparison of the BPC-4 and the baseline
- The BPC-4 was 40 % faster than the baseline
- The BPC-4 is less likely to lead to cuts/ injuries than the baseline
- The 28 lb. BPC-4 was awkward to position on the upper glovebox leg
- Mega-Tech demonstrated two additional cutters that could be useful in D&D activities.



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Criteria;

2. Relevancy
3. Tech Progress

Data from Mega-Tech showed the advantages of BPC-4

ITEM	BPC-4	Recip Saw
Unistrut leg cutting (sec)	18.4	29.3
3" pipe leg cutting (sec)	70.4	117
Shavings (grams/cm cut)	0.06	0.66
Emissions	none	fumes



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Criteria;
3. Tech Progress

Contact Information

- John Stouky; Mega-Tech; 336-316-0707
- John McFee; IT Corp; 303-793-5231
- Ellen Stallings; LANL; 505-667-2236
- Steve Bossart; NETL; 304-285-4643



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Criteria;
2. Relevancy

Los Alamos LSDDP FY00 program

- Complete FY99 Demonstrations and reports
- Engage the Technology Selection Committee to identify and select FY01 demonstrations.
- Two technologies are already in serious consideration; FastCam and video record keeping



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Criteria;
4. Future Plans

Project Schedule

- Complete FY 99 Demonstrations (reporting continues) March 00
- Revise technical needs Done
- Re-convene technology selection committee Done
- Compile list of technologies May 00
- Down select technologies for FY 01 demonstration July 00
- Initiate USQDs July 00
- Subcontract vendors Dec 00
- Demonstrations Complete April 01
- Reports complete Oct 01



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Criteria;
4. Future Plans

LSDDP Issues

- FY 99 demonstrations executed, reporting continues
- DDFA funding supports technology selection in FY00
- Demonstrations in FY01 will focus on DVRS process issues
- There is a small time window for FY01 demonstrations



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Criteria;

2. Relevancy
4. Future Plans

Lessons Learned

- LANL Site interest in demonstrations is high
- Authorization basis approval can be complex
- Vendors are generally eager to participate
- ITSR issuance is slowed by complex input



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Criteria;

1. Goals
2. Relevancy

Other Comments:

- LSDDP staff is communicating with NTS, RFETS, INEEL, AMWTP, RL, SR, and Fernald to ensure multiple site needs are included



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